



Information and Technology for Better Decision Making

2008 Post-Election Voting Survey of Federal Civilians Overseas

Statistical Methodology Report

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**2008 POST-ELECTION VOTING SURVEY OF
FEDERAL CIVILIANS OVERSEAS:
STATISTICAL METHODOLOGY REPORT**

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Policy officials contributing to the development of this survey include Erin St. Pierre and Scott Wiedmann (Federal Voting Assistance Program).

DMDC's Program Evaluation Branch, under the guidance of Brian Lappin, previous Branch Chief, and Kristin Williams, current Branch Chief, is responsible for the development of questionnaires in the survey program. The lead survey design analyst was Robert Tinney.

DMDC's Personnel Survey Branch, under the guidance of David McGrath, Branch Chief, is responsible for sampling and weighting methods used in the survey program, and survey database construction and archiving. The lead operations analyst on this survey was Dee Batra, supported by Tina Thomas, Consortium Research Fellow. The lead statistician on this survey was Mark Gorsak, supported by Katrina Hsen, Consortium Research Fellow. Mike Wilson, Westat, Inc. developed weights for this survey. Westat performed data collection and editing.

DMDC's Survey Technology Branch, under the guidance of Frederick Licari, Branch Chief, is responsible for the distribution of datasets outside of DMDC and maintaining records on compliance with the Privacy Act and 32 CFR 219.

2008 POST-ELECTION VOTING SURVEY OF FEDERAL CIVILIANS OVERSEAS: STATISTICAL METHODOLOGY REPORT

Executive Summary

The Uniformed and Overseas Citizens Absentee Voting Act of 1986 (UOCAVA), 42 USC 1973ff, permits members of the Uniformed Services and Merchant Marine, and their eligible family members and all citizens residing outside the United States who are absent from the United States and its territories to vote in the general election for federal offices. These groups include:

- Members of the Uniformed Services (including Army, Navy, Air Force, Marine Corps, Coast Guard)
- U.S. citizens employed by the Federal Government residing outside the U.S., and
- All other private U.S. citizens residing outside the U.S.

The Federal Voting Assistance Program (FVAP), under the guidance of USD(P&R), is charged with implementing the UOCAVA and evaluating the effectiveness of its programs. The FVAP Office asked DMDC to design, administer, and analyze post-election surveys on Uniformed Services voter participation, overseas nonmilitary voter participation, and local election officials. Without such surveys, the Department will not be able to assess and improve voter access. In addition, such surveys fulfill 1988 Executive Order 12642 that names the Secretary of Defense as the “Presidential designee” for administering the UOCAVA and requires surveys to evaluate the effectiveness of the program in presidential election years.

The objectives of the 2008 post-election surveys are: (1) to gauge participation in the electoral process by citizens covered by UOCAVA, (2) to assess the impact of the FVAP’s efforts to simplify and ease the process of voting absentee, (3) to evaluate other progress made to facilitate voting participation, and (4) to identify any remaining obstacles to voting by these citizens. Surveys were done of military members, federal civilian employees overseas, other U.S. citizens overseas, voting assistance personnel, and local election officials in the U.S.

This report focuses on the *2008 Post-Election Voting Survey of Federal Civilians Overseas (2008 FCO)*, which was designed to capture the attitudes and behaviors of federal civilians overseas. This report describes the sampling and weighting methodologies used in the *2008 FCO*. Calculation of response rates is described in the final section.

The population of interest for the *2008 FCO* consisted of all American citizen federal civilian employees living and working overseas. The total sample size was 9,156. The survey administration period lasted from November 7, 2008, to January 8, 2009. There were 2,168 usable questionnaires.

After the determination of eligibility for the survey and completion of a survey, analytic weights were created to account for varying response rates among population subgroups. First, the sampling weights (the inverse of the selection probabilities) were computed. Second, the base weights were adjusted to account for survey nonresponse.

Location, completion, and response rates are provided in the final section of this report for both the full sample and for population subgroups. These rates were computed according to the recommendations of the Council of American Survey Research Organizations (1982) and the American Association for Public Opinion Research (AAPOR, 2008). The location, completion, and response rates were 97%, 22%, and 21%.

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2008 POST-ELECTION VOTING SURVEY OF FEDERAL CIVILIANS OVERSEAS: STATISTICAL METHODOLOGY REPORT

Introduction

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This report describes the sampling and weighting methodologies used in the *2008 Post-Election Voting Survey of Federal Civilians Overseas (2008 FCO)*. The first section describes the design and selection of the sample. The second section describes weighting and variance estimation. The final section describes the calculation of response rates, location rates, and completion rates for the full sample and for population subgroups. The design for this survey is based on the 2004 survey of Department of Defense civilian federal employees. Tabulated results of the survey are reported by DMDC (2009).

Sample Design and Selection

Target Population

The 2008 FCO was designed to represent all American citizen federal civilian employees living and working overseas. In contrast, the 2004 survey represented only Department of Defense federal civilian employees living overseas.

Sampling Frame

The sampling frame was built from two sources, the Office of Personnel Management's (OPM) Central Personnel Data File (CPDF) and the Department of State's personnel records. The first source was the OPM CPDF, which includes federal civilians working overseas for 32 federal agencies. The information provided from OPM's CPDF was dated March 2008. The OPM frame included 35,542 records. Table 1 presents frame counts by agency.

Table 1.
OPM Counts for Federal Civilians Overseas by Agency

| Agency | Count |
|--|--------------|
| Total | 35,542 |
| Other Department of Defense | 13,327 |
| Department of the Army | 11,653 |
| Department of the Navy | 3,678 |
| Department of the Air Force | 2,903 |
| Department of Homeland Security | 987 |
| Department of Justice | 986 |
| Agency for International Development | 909 |
| Peace Corps | 208 |
| Department of Commerce | 198 |
| Department of Agriculture | 186 |
| Department of Health and Human Services | 141 |
| Department of Transportation | 67 |
| Department of Treasury | 48 |
| Broadcasting Board of Governors | 40 |
| American Battle Monuments Commission | 37 |
| <i>Department of State (Minus Foreign Svc)</i> | 35 |
| Millennium Challenge Corporation | 25 |
| General Services Administration | 23 |
| Department of Veterans Affairs | 17 |
| Smithsonian Institution | 16 |

Table 1. (continued)

| Agency | Count |
|--|--------------|
| Department of Energy | 13 |
| Nat Aeronautics and Space Administration | 13 |
| Office of the U.S. Trade Representative | 13 |
| Department of Interior | 8 |
| National Science Foundation | 4 |
| African Development Foundation | 1 |
| Department of Education | 1 |
| International Joint Cmsn: U.S. & Canada | 1 |
| Japan-United States Friendship Cmsn | 1 |
| Marine Mammal Commission | 1 |
| Nuclear Regulatory Commission | 1 |
| Social Security Administration | 1 |

Several characteristics were noted when examining the OPM frame. First was the low count for Department of State (DoS) overseas employees. Second was the great number of Department of Defense (DoD) overseas employees relative to other agencies. Finally, a number of agencies had very few overseas employees. Each of these observations led to actions that affected frame composition and/or sample selection.

It was determined that the low count for the DoS was due to the fact that DoS, not OPM, maintains personnel records for Foreign Service employees. Discussions with DoS personnel led to the agreement that they would provide the frame for their overseas employees. The file of DoS personnel records is the second source of data for the sample frame.

Due to the separate frame for DoS employees and the disparities in size between DoD and other federal agency overseas workforce, it was decided to divide the sample frame into three segments: (1) DoS employees, (2) DoD employees, and (3) employees for all other federal agencies. Further, it was decided to include in the sample frame of other federal agencies only those with 20 or more overseas employees. The federal agencies omitted are below the bolded line in Table 1. This reduced the number of agencies in the frame from 23 to 13 but only reduced the count of overseas employees in other federal agencies by 91 or 2.3%.

The primary reason for excluding agencies was to reduce the potential scope of burden for federal agencies. OPM's CPDF does not contain e-mail addresses for employees. Therefore, any employee selected from an agency required a DoD request to that agency to provide the e-mail address of the selected individual. The DoD and DoS are be able to supply e-mail addresses for their employees. By reducing the potential number of agencies included in the sample, the total agency burden of supplying e-mail addresses was reduced. Population counts for the DoD, DoS, and the other 13 agency components of the sample frame are shown in Table 2.

Table 2.
Population Counts by Agency

| Agency | Count | Percent % |
|------------------------|--------------|------------------|
| Total | 43,251 | 100.0 |
| Department of Defense | 31,561 | 73.0 |
| Department of State | 7,835 | 18.1 |
| Other Federal Agencies | 3,855 | 8.9 |

Sample Design

For the sample design, the frame was stratified by geographic region. The five geographic regions used were Africa, East Asia/Pacific Islands, Europe, Northeast and South Central Asia, and Western Hemisphere. This stratification of countries used the DoS's definition of geographic regions. Population counts by agency and geographic region are shown in Table 3.

Table 3.
Population Counts By Agency Within Region

| Agency | Region | | | | | |
|------------------------|---------------|---------------|-------------------------------|---------------|---------------------------|-------------------------------|
| | Total | Africa | East Asia/ Pacific | Europe | NE and SC Asia | Western Hemisphere |
| Total | 43,251 | 1,579 | 11,871 | 22,575 | 3,864 | 3,362 |
| Department of Defense | 31,561 | 12 | 9,964 | 19,574 | 1,634 | 377 |
| Department of State | 7,835 | 1,030 | 1,328 | 2,158 | 1,764 | 1,555 |
| Other Federal Agencies | 3,855 | 537 | 579 | 843 | 466 | 1,430 |

The 2008 FCO used a single-stage stratified design. Within each stratum, individuals were selected with equal probability without replacement using systematic random sampling. Since the allocation of the sample was not proportional to the size of strata, selection probabilities varied among strata, and individuals were not selected with equal probability overall. Nonproportional allocation was used to achieve adequate sample sizes for relatively small subpopulations of analytic interest. The primary domain of interest is geographic region.

Survey Allocation

The total sample size was based upon precision requirements for the key reporting domain. There are five geographic regions and for each region, a confidence interval of ± 5

percentage points with 95% confidence was desired.¹ Considering sample performance from the 2004 survey (location/delivery rate of 0.60 and cooperation rate of 0.28), a slightly higher overall sample yield rate of 0.21 was assumed for the 2008 survey (location/delivery rate of 0.70 and cooperation rate of 0.30). The adjustment yielded a sample size of approximately 1,900 for each geographic region and a total target sample size of 9,500.

The 2008 FCO sample allocation had to address the size differences among the three agency strata (DoD, DoS, and other federal agencies). There was great disparity in agency strata size (see Table 2). The large majority of overseas federal civilian employees were DoD employees. If a proportionate-to-size allocation strategy were adopted, there would be very little survey input from agencies other than DoD and DoS. If an equal allocation were implemented across agency strata (e.g., 633 per strata) some region/strata cells would not have enough cases to meet their sample quota.

As a compromise between equal and proportionate allocation, a square root allocation was used. Under this allocation, the sample is allocated to the subpopulations proportional to the square root of the size of the subpopulation. Under the square root allocation, the sample is reallocated from the very large agency groups to the smaller agency groups as compared to what would have been done under a proportionate allocation.

This can be put in context when compared to a more general compromise allocation—the power allocation—under which the sample is allocated proportional to x^λ , where x is the measure of size and the parameter λ can take values between zero and 1. The value $\lambda = \frac{1}{2}$ corresponds to the square root allocation. The two extreme values of λ give the equal allocation and the proportionate-to-size allocation. More precisely, $\lambda = 0$ corresponds to equal allocation and $\lambda = 1$ corresponds to proportionate-to-size allocation.

Because of the issues mentioned for the equal and proportionate allocations, the square root allocation strategy is particularly well suited for the 2008 FCO. Specifically, if we let n denote the total sample size, and let n_h be the sample allocated to stratum g , then n_h is equal to

$$n_h = n \frac{\sqrt{N_h}}{\sum_h \sqrt{N_h}},$$

where N_h is the total number of persons in stratum h .

Sample Selection

Each frame was stratified by geographic region and separate systematic random samples were drawn for each region. Before sample selection, the DoD and other agencies frames were sorted by agency, country, and sex. The DoS frame, which by definition consisted of only one

¹ In the sample size calculations, a more conservative confidence interval of $\pm 4.2\%$ was adopted as a hedge against possible lower-than-expected sample yields.

agency, was sorted by country, sex, and supervisory status (variable not available on the other frames). The selected sample by agency and geographic region is shown in Table 4.

Table 4.
Sample Counts by Agency Within Region

| Agency | Region | | | | | |
|------------------------|--------|--------|-----------------------|--------|-------------------|-----------------------|
| | Total | Africa | East Asia/ Pacific | Europe | NE and SC Asia | Western Hemisphere |
| Total | 9,156 | 1,572 | 1,898 | 1,897 | 1,896 | 1,893 |
| Department of Defense | 3,544 | 12 | 1,183 | 1,234 | 738 | 377 |
| Department of State | 3,397 | 1,023 | 430 | 407 | 764 | 773 |
| Other Federal Agencies | 2,215 | 537 | 285 | 256 | 394 | 743 |

Survey Administration

Sample Contact Information

The availability of contact information for sampled employees varied by the sample frame segment. For DoS employees, DoS was able to provide e-mail addresses for all sampled members. The other segments of the frame (DoD and all other agencies) were compiled using OPM's Central Personnel Data File (CPDF). The CPDF does not contain address information so each sampled agency was asked, after sample selection, to provide e-mail and/or postal addresses for selected employees. DMDC supplied e-mail and/or postal addresses for DoD employees. For the other agencies sampled, a point of contact was asked to provide e-mail addresses. The results of collecting addresses before the beginning of the survey administration are shown in Table 5.

Table 5.
Counts of Contact Information by Agency

| Agency | Sample Cases | With E-mail Address | With Postal Address | With No Available Address |
|------------------------|--------------|------------------------|------------------------|------------------------------|
| Total | 9,156 | 7,930 | 362 | 846 |
| Dept. of State | 3,397 | 3,397 ^a | 0 | 0 |
| Dept. of Defense | 3,544 | 3,147 | 362 ^b | 35 |
| Other Federal agencies | 2,215 | 1,386 | 0 | 829 ^c |

^a The DoS sample included 18 cases subsequently removed from the sample due to ineligibility.

^b Sixty cases were not included in the data collection effort since the cases had U.S. postal addresses.

^c The 829 missing e-mail addresses included 602 cases not provided to DMDC by the Department of Agriculture and the Department of Justice.

The DoS was able to provide e-mail addresses for all sampled individuals. The DoD was able to provide e-mail addresses for nearly 90% (3,147) of the sample and postal addresses for slightly more than 10% (362) of the sample. There were 35 DoD sample cases without any contact information.

For the other federal agencies, only e-mail addresses were obtained. Two sampled agencies, the Departments of Agriculture and Justice, were not able to provide addresses within the time period allowed before survey administration. Therefore, none of the 602 individuals sampled from these two agencies were included in data collection. The remaining 227 sampled individuals with no addresses were due to mismatches between employee name and SSN, or the sampled individual had left the agency. All agencies identified individuals who left the agency except for the Peace Corps. The Peace Corps was the only agency unable to provide contact due to mismatches.

Survey Communications

Survey administration for the 2008 FCO began on November 7, 2008, and continued through January 8, 2009. The survey was administered in mixed modes—in both Web and paper formats. Sample members with an e-mail address were initially assigned to the Web survey, whereas DoD employees with only a postal address were initially assigned to the paper survey. Please see DMDC (In preparation) for further information on survey administration.

The plan called for three types of communications with sampled employees: pre-notification, survey invitation, and thank you/reminder. The pre-notification would alert sampled individuals that they had been selected for participation in the survey and provide background on the purpose and sponsor of the survey. The second communication “survey invitation” would contain the paper survey for postal recipients or a link to the survey for Web recipients. Finally, the third type of communication would be a “thank you/reminder.” After a specified period following survey invitation/distribution, the “thank you/reminder” would be sent. The main purpose of this communication was to remind sampled individuals of the survey and ask them to please complete and return the survey.

Web Survey Administration

Survey invitation and thank you/reminder e-mails were sent to the survey sample with known e-mail addresses, under the signature of Polli Brunelli, Director of the Federal Voting Assistance Program (FVAP). The dates for the e-mail distribution are shown in Table 6.

Table 6.
E-mail Distribution to Federal Civilians Overseas

| Type of E-mail | Date |
|-----------------------|-------------|
| Survey Invitation | 11/7/08 |
| DHS Survey Invitation | 11/19/08 |
| Thank you/reminder: | |
| First | 11/14/08 |
| Second | 11/20/08 |
| Third | 12/1/08 |
| Fourth | 12/16/08 |
| Last | 1/5/09 |

Pre-notifications were not sent to individuals in the sample because addresses were obtained too late in the schedule to allow sufficient lead time for pre-notification. For one agency, Department of Homeland Security (DHS), addresses were not received until shortly after the beginning of survey administration. A separate survey invitation mailing was made for DHS 12 days after the original survey invitation (i.e., November 19, 2008).

All e-mail notifications included a hyperlink to the survey Web site and a unique Ticket Number for logging on to the survey. Thank you/reminders were sent to all sample members excluding the following:

- Those who had submitted a Web survey or returned a paper survey;
- Those who had requested a paper survey; and
- Those who had been assigned a case disposition code indicating a refusal or survey ineligibility (e.g., a disposition code for deceased or no longer employed with the agency).

There were 866 undeliverable e-mail survey invitations sent on November 7, 2008, because of server errors and other problems (e.g., bad address, timed out, relaying denied, address not found). E-mail addresses ending in DoD.edu that were not deliverable were updated. From the 503 e-mail addresses that were undeliverable to DoD.edu, there were approximately 50 updated addresses. Those updates were included in the December 1, 2008 thank you/reminder e-mails and all subsequent e-mails.

Mail Survey Administration

The paper survey was formatted and prepared for printing. A unique Ticket Number and the URL for accessing the Web version of the survey were included on the cover of the paper survey. Instructions were included stating that sample members had the option of completing either the Web or paper versions of the survey. The only sample members to receive paper surveys were from the DoD.

Printed survey materials were assembled into survey packets. Each packet included a survey cover letter (under the signature of Polli Brunelli, Director of FVAP), the survey, an envelope with a DoS address for returning the survey, and an outer mailing envelope. The packets were franked and mailed via the United States Postal Service (USPS) on November 7, 2008, to 300 DoD federal civilian employees with overseas postal addresses.

Return postage was not affixed to the outer mailing envelope. Sample members had three options for returning their completed paper surveys. The first option was to return the survey personally to their embassy or consulate. The second was to mail the survey to their embassy or consulate using their own postage. Once an embassy or consulate received a survey, the survey was sent via diplomatic pouch to the DoS. The DoS delivered them in batches via FedEx to Westat for data entry, cleaning, and processing. The third option was the respondent to supply their own postage on the return envelope and mail it directly to the DoS in Washington, DC. The DoS then delivered the survey to Westat.

Survey Administration Issues

Selection for Multiple FVAP Surveys

Among the populations included in the post-election voting surveys for the Federal Voting Assistance Program (FVAP) were overseas federal civilian employees. By definition, VAOs are overseas federal civilian employees, and some were selected to participate in two surveys (the *2008 Post-Election Survey of DoS Voting Assistance Officers* and the *2008 Post-Election Survey of Federal Civilians Overseas*) at the same time. Participation in the two surveys led to confusion among approximately 10 VAOs.

The two most frequent confusions regarded Ticket Numbers and objections to the continued sending of “thank you/reminder” notices. Individuals selected for the two surveys would have two different Ticket Numbers. It was not uncommon that the wrong Ticket Number was used to gain entry to a survey. If a doubly sampled person completed one survey, they sometimes complained that they should not be receiving additional contacts asking them to complete the survey. When these problems were identified, the DoS sent e-mails to the VAOs explaining that more than one post-election survey was being fielded.

Weighting

The analytic weights for the *2008 FCO* were created to allow the estimation of population values by eligible survey respondents. To facilitate this representation, weights were created that reflected the differential survey sampling counts in the 15 population subgroups (Table 3 and Table 4) and the differential response rates in each of these subgroups. First

sampling weights were computed to account for selection probability as the inverse of the selection probabilities in each of the 15 subgroups. After determining case dispositions, in the second step, the base weights in 14 subgroups² were adjusted primarily for nonresponse and eligibility. The weight includes respondents that were self-identified as “not registered” voters as well as “registered” voters.

Case Dispositions

Case dispositions were assigned for weighting based on eligibility for the survey and completion of the return. Execution of the weighting process and computation of response rates both depend on this classification.

Final case dispositions for weighting were determined using information from personnel records, field operations (the Survey Control System or SCS), and returned surveys. No single source of information is both complete and correct; inconsistencies among these sources were resolved according to the order of precedence shown in Table 7.

Table 7.
Case Disposition Resolution

| Case Disposition | Information Source | Conditions |
|-------------------------------------|---------------------------|---|
| Ineligible by self- or proxy-report | SCS | Ill, Incarcerated, or Deceased. |
| Survey response: ineligible | Survey questionnaire | Respondent is not a US citizen or is less than 18 years old. |
| Eligible, complete response | Item response rate | Item response is at least 50% for respondents that were registered voters. All respondents self-identified as “not registered” were eligible and complete for the survey. |
| Eligible, incomplete response | Item response rate | Return is not blank but item response is less than 50% for registered voters. |
| Active refusal | SCS | Reason for refusal is “any;” ineligible reason is “other;” reason survey is blank is “refused-too long,” “ineligible-other,” “unreachable at this address,” “refused by current resident,” or “concerned about security/confidentiality.” |
| Blank return | SCS | No reason given. |
| PND | SCS | Postal non-delivery or original non-locatable. |
| Nonrespondent | Remainder | Remainder |

This order is critical to resolving case dispositions. For example, suppose a sample person refused the survey, with the reason that it was too long; in the absence of any other information, the disposition would be “eligible nonrespondent.” If a proxy report was also given

² DoD Africa was collapsed with DoS Africa since there were 12 cases in DoD Africa.

that the sample person had been hospitalized and was unable to complete the survey, the disposition would be “ineligible.” Final case dispositions for the 2008 FCO are shown in Table 8.

Table 8.
Sample Size by Case Disposition Categories

| Case Disposition Category and (Code Value) | Sample Size |
|---|--------------------|
| Total | 9156 |
| Ineligible Response | |
| Self/Proxy-report (2) | 7 |
| Survey Self report (3) | 473 |
| Eligible Response | |
| Complete (4) | 2168 |
| Incomplete (5) | 226 |
| Refused/Deployed/Other (8) | 26 |
| Blank (9) | 0 |
| Postal Non-Delivery (10) | 5641 |
| Non-respondents (11) | 615 |

Eligible Completed Cases for Weighting

The total number of eligible cases for weighting is shown in Table 9. Since there were only 12 federal civilians overseas for the DoD in Africa, the cases from that stratum were collapsed with the cases in the DoS Africa. The base weights for each stratum are shown in Table 10.

Table 9.
Complete Eligible Cases by Agency and Region

| Agency | Region | | | | | |
|------------------------|---------------|----------------|-------------------------------|---------------|---------------------------|-------------------------------|
| | Total | Africa | East Asia/ Pacific | Europe | NE and SC Asia | Western Hemisphere |
| Total | 2168 | 564 | 410 | 363 | 417 | 414 |
| Department of Defense | 496 | * ^a | 190 | 171 | 96 | 39 |
| Department of State | 1254 | 407 | 170 | 155 | 247 | 275 |
| Other Federal Agencies | 418 | 157 | 50 | 37 | 74 | 100 |

^a DoD Africa was collapsed with DoS Africa since there were 12 cases in DoD Africa.

Table 10.
Base Weights by Agency and Region

| Agency | Region | | | | |
|------------------------|--------|-----------------------|---------|-------------------|-----------------------|
| | Africa | East Asia/ Pacific | Europe | NE and SC Asia | Western Hemisphere |
| Department of Defense | 1.0000 | 8.4227 | 15.8622 | 2.2141 | 1.0000 |
| Department of State | 1.0068 | 3.0884 | 5.3022 | 2.3089 | 2.0116 |
| Other Federal Agencies | 1.0000 | 2.0316 | 3.2930 | 1.1827 | 1.9246 |

Adjustments to Base Weights and Final Weight

After the determination of eligibility for the survey and completion of a survey, analytic weights were created to account for varying response rates among population subgroups. First, the sampling weights were computed and for cases of known eligibility (values 2, 3, 4, or 5) were adjusted to account for cases of unknown eligibility (values 8, 9, 10, or 11). Second, the eligibility-adjusted weights for eligible respondents (value 4) were adjusted to account for eligible sample members who had not returned a completed survey (value 5). Third, the weights for respondents in each region were adjusted by post-stratifying respondent counts to the population counts presented in Table 1. The final weights for all geographic regions are shown in Table 11.

Table 11.
Federal Civilian Overseas Final Weights by Agency and Region

| Agency | Region | | | | |
|------------------------|----------------|-----------------------|----------|-------------------|-----------------------|
| | Africa | East Asia/ Pacific | Europe | NE and SC Asia | Western Hemisphere |
| Department of Defense | * ^a | 48.5660 | 107.0644 | 14.8765 | 8.9231 |
| Department of State | 2.3000 | 7.1511 | 12.4232 | 6.3177 | 5.0368 |
| Other Federal Agencies | 2.4043 | 7.1059 | 11.3919 | 4.8848 | 7.9294 |

^a DoD Africa was collapsed with DoS Africa since there were 12 cases in DoD Africa.

Variance Estimation

Analysis of the 2008 FCO data requires a variance estimation procedure that accounts for the complex sample design. The final step of the weighting process was to define strata for variance estimation by Taylor series linearization. The 2008 FCO variance estimation strata correspond to the region. It was necessary to collapse the stratum that identified federal civilians overseas in DoD Africa with the stratum of federal civilians overseas in DoS Africa since there

were 12 people in the DoD Africa. Fourteen variance estimation strata were defined for the 2008 FCO. The variance estimation strata correspond to the sampling strata after collapsing.

Location, Completion, and Response Rates

Location, completion, and response rates were calculated in accordance with guidelines established by The Council of American Survey Research Organizations (CASRO). The procedure is based on recommendations for Sample Type II response rates (Council of American Survey Research Organizations, 1982). This definition corresponds to the American Association for Public Opinion Research (AAPOR) RR3 (AAPOR, 2008), which estimates the proportion of eligible cases among cases of unknown eligibility.

Location, completion, and response rates were computed for 2009 FCO as follows:

The location rate (LR) is defined as

$$LR = \frac{\text{adjusted located sample}}{\text{adjusted eligible sample}} = \frac{N_L}{N_E}.$$

The completion rate (CR) is defined as

$$CR = \frac{\text{usable responses}}{\text{adjusted located sample}} = \frac{N_R}{N_L}.$$

The response rate (RR) is defined as

$$RR = \frac{\text{usable responses}}{\text{adjusted eligible sample}} = \frac{N_R}{N_E}.$$

where

- N_L = Adjusted located sample
- N_E = Adjusted eligible sample
- N_R = Usable responses.

To identify the cases that contribute to the components of LR, CR, and RR, the disposition codes were grouped as shown in Table 12.

Table 12.
Disposition Codes for CASRO Response Rates

| Case Disposition Category | Code Value^a |
|----------------------------------|-------------------------------|
| Eligible Sample | 4, 5, 8, 10, 11 |
| Located Sample | 4, 5, 8, 11 |
| Eligible Response | 4 |
| No Return | 11 |
| Eligibility Determined | 2, 3, 4, 5, 8 |
| Self Report Ineligible | 2, 3 |

^a Code values are from Table 8.

Ineligibility Rate

The ineligibility rate (IR) is defined as

$$IR = \frac{\text{self report ineligible cases}}{\text{eligible determined cases}}.$$

Estimated Ineligible Postal Non-Deliverable/Not Located Rate

The estimated ineligible postal non-deliverable/not located rate (IPNDR) is defined as

$$IPNDR = (\text{Eligible Sample} - \text{Located Sample}) * IR.$$

Estimated Ineligible Nonresponse

The estimated ineligible nonresponse (EINR) is defined as

$$EINR = (\text{Not returned}) * IR.$$

Adjusted Location Rate

The adjusted location rate (ALR) is defined as

$$ALR = \frac{(\text{Located Sample} - EINR)}{(\text{Eligible Sample} - IPNDR - EINR)}.$$

Adjusted Completion Rate

The adjusted completion rate (ACR) is defined as

$$ACR = \frac{(\text{Eligible response})}{(\text{Located Sample} - EINR)}.$$

Adjusted Response Rate

The adjusted response rate (ARR) is defined as

$$ARR = \frac{(\textit{Eligible response})}{(\textit{Eligible Sample} - \textit{IPNDR} - \textit{EINR})}.$$

Weighted location, completion, and response rates by region for 2008 *FCO* are shown in Table 13.

Table 13.
Rates for Full Sample and Stratification Levels

| Domain | Sample Size | Usable Responses | Sum of Weights | Location Rate (%) | Completion Rate (%) | Response Rate (%) |
|------------------------|--------------------|-------------------------|-----------------------|--------------------------|----------------------------|--------------------------|
| Sample | 9156 | 2168 | 43251 | 97 | 22 | 21 |
| Agency | | | | | | |
| Dept. of Defense | 3544 | 496 | 31561 | 100 | 16 | 16 |
| Dept. of State | 3397 | 1254 | 7835 | 100 | 41 | 41 |
| Other Federal Agencies | 2215 | 418 | 3855 | 70 | 41 | 28 |
| Region | | | | | | |
| Africa | 1572 | 564 | 1579 | 98 | 44 | 43 |
| East Asia/Pacific | 1898 | 410 | 11871 | 98 | 21 | 21 |
| Europe | 1897 | 363 | 22575 | 98 | 18 | 18 |
| NE and SC Asia | 1896 | 417 | 3864 | 97 | 27 | 26 |
| Western Hemisphere | 1893 | 414 | 3362 | 83 | 36 | 30 |
| Agency by Region | | | | | | |
| Dept. of Defense | | | | | | |
| East Asia/Pacific | 1183 | 190 | 9964 | 100 | 17 | 17 |
| Europe | 1234 | 171 | 19574 | 99 | 15 | 15 |
| NE and SC Asia | 738 | 96 | 1634 | 100 | 15 | 15 |
| Western Hemisphere | 377 | 39 | 377 | 99 | 11 | 11 |
| Dept. of State | | | | | | |
| Africa | 1035 | 407 | 1042 | 100 | 44 | 44 |
| East Asia/Pacific | 430 | 170 | 1328 | 100 | 43 | 43 |
| Europe | 407 | 155 | 2158 | 100 | 43 | 43 |
| NE and SC Asia | 764 | 247 | 1764 | 100 | 37 | 37 |
| Western Hemisphere | 773 | 275 | 1555 | 100 | 40 | 40 |
| Other Federal Agencies | | | | | | |
| Africa | 537 | 157 | 537 | 93 | 45 | 42 |
| East Asia/Pacific | 285 | 50 | 579 | 69 | 41 | 29 |
| Europe | 256 | 37 | 843 | 68 | 42 | 29 |
| NE and SC Asia | 394 | 74 | 466 | 75 | 32 | 24 |
| Western Hemisphere | 743 | 100 | 1430 | 60 | 40 | 24 |

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